Description of Menstrual Pattern Based on Anemia Status in Public Junior High School Students 14 Denpasar

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ABSTRACT

Background: The prevalence of anemia among adolescents in Indonesia is 32%. The proportion of anemia in women is 27.2% greater than in men by 20.3%. The incidence of anemia in Bali Province in 2019 reached 5.07%. The prevalence of anemia in Denpasar increase by 4.7% to 7.55% in 2020. Many factors cause anemia. One of the factor causing iron deficiency anemia is chronic blood loss, ie; menstruation. The purpose of this study was describe menstrual patterns in anemic and non-anemic female students at SMP Negeri 14 Denpasar. **Methods**: The data used from the Bali Provincial Health Office in 2019 with a cross sectional approach. The number of subjects in this observation were 30 students of SMP Negeri 14 Denpasar who were selected using a multistage sampling technique. **Result:** The results of this observation indicate that there is a tendency for the influence of menstrual patterns on the prevalence of anemia. The regulate of menstrual pattern caused the higher of hemoglobin level. The suggestions of this research that can be conveyed are immediately carrying out government programs in collaboration with the nearest health center in providing iron tablets and conducting further research to find out other causes of anemia.

Keywords: Anemia, Menstruation Pattern, Teenage Girls

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INTRODUCTION

Anemia is a widespread nutritional problem that affects people all over the world. It does not only occur in these countries, but it also occurs in developed countries. World Health Organization (WHO) lists of anemia as one of the top ten health problems faced by modern society. Women with reproductive age (WUS), pregnant women, children of school age, and adolescents are at higher risk of anemia (Simanullang, 2018). According to WHO 2011, the cut-off reference in children aged 6 - 59 months is < 11 g/dL, for children aged 5 - 11 years is < 11.5 g/dL, for children aged 12 - 14 years is < 12 g/dL, women of childbearing age ≥ 15 years is < 12 g/dL, pregnant women is < 11 g/dL, and men aged ≥ 15 years is < 13 g/dL (Kementrian Kesehatan Republik Indonesia, 2019).

The prevalence of anemia among adolescents in Indonesia reaches 32%. The proportion of anemia is greater in women (27.2%) compared to men (20.3%) (Kementrian Kesehatan Republik Indonesia, 2019). The pevalence of anemia in Bali Province in 2019 was 5.07% (Bali Provincial Health Office, 2020) to 5.78 percent in 2020. Anemia in Denpasar was increased by 4.7% to 7.55% in 2020. Anemia can cause fatigue, reduced ability to concentrate while learning, thus reducing the quality of learning and reducing productivity. It can also reduce the body's immunity, making the body vulnerable to infection. The prevalence of anemia in adolescents that is not addressed properly will continue into adulthood and become a major contributor to maternal mortality, prematurity and low birth weight babies.

Many factors cause anemia, including internal and external factors. Internal factors that contribute to the emergence of anemia are chronic blood loss, namely menstruation (Yuwono, 2019). According to research conducted by Kumalasari in 2018, it was stated that there was a relationship between the menstrual pattern and the prevalence of anemia in teenage girls who were students of junior high school Negeri Lampung east in 2018.

The research results from Sriningrat, show that the prevalence of anemia in adolescent girls in of Denpasar were 45.9%. The incidence of anemia in adolescent girls in the city of Denpasar tends to occur in adolescent girls with low energy, low protein, low iron and low vitamin C intake, malnutrition, menstrual cycle, long duration, high activity and low income of the person (Sriningrat et al., 2019). Based on the background that has been made, researchers are interested in conducting research to find out the description of menstrual patterns based on anemia status in students of SMP Negeri 14 Denpasar.

METHOD

The research was conducted at SMP Negeri 14 Denpasar. This study was conducted from February to March 2023. The type of research was an observational study using a cross-sectional design, in which each sample was only observed once and measurements were taken on nutritional status, hemoglobin levels and menstrual patterns. The sampling technique used in this study was multistage random sampling. Sampling was done through 2 stages. The first stage was conducted to select the class to be used, the selection was done randomly.

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The second stage was to take female students from 3 classes that have been selected, the selection is done randomly. The number of samples in this study were 30 people. The types of data collected were sample identity data, hemoglobin levels, nutritional status, menstrual patterns, infrastructure and health activities carried out at school. Data analysis was done descriptively and presented using univariate and bivariate tables.

RESULT

1. Subject Characteristics

The characteristics of the subjects including of aged, menarche and nutrition status that can be seen , in Table 1 below.

Table 1. Subject Characteristics

Variable	Category	Result	
		f	%
Age	13	4	13,33
	14	9	30,00
	15	17	56,67
Total		**30**	**100,00**
Age of Menarche	< 12	4	13,33
	12 – 14	26	86,67
Total		**30**	**100,00**
Nutrition Status (BMI/Age)	Severely Thinness	0	0,00
	Thinness	2	6,67
	Normal	22	73,33
	Overweight	3	10,00
	Obese	3	10,00
Total		**30**	**100,00**

This observation was carried out involving 30 female students at SMP Negeri 14 Denpasar with predetermined criteria. Based on the table above, it is found that 56.67% are 15 years old, 30% are 14 years old, and 13.33% are 13 years old. Based on the data that has been analyzed, it is known that 86.67% of female students experienced their first menstruation at the age of 12-14 years and 13.33% experienced their first menstruation at the age of <12 years. The nutritional status of students was found that 73.33% of female students had good nutritional status (normal), 10% of female students had overweight, 10% of female students had obese and 6.67% students were malnourished.

2. Menstrual Pattern

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Based on the results of research the distribution of menstrual patterns of the subjects can be seen in table 2.

Table 2. Distribution of Menstrual Pattern

Menstrual Patterns	Category	Result	
		F	%
Menstrual Cycle	Brief	6	20
	Normal	15	50
	Long	9	30
Total		30	100
Duration of Menstruation	Normal	15	50
	Abnormal	15	50
Total		30	100
Menstrual Volume	Normal	7	23
	Abnormal	23	77
Total		30	100

Based on the table 2, the results of subjects who have a short menstrual cycle were 6 people (20%), subjects who have a normal menstrual cycle were 15 people (50%) and students who experience a long menstrual cycle are 9 people (30%). Based on the interviews conducted, the results of subjects who experienced normal menstrual duration were 15 people (50%) and the subjects who experienced abnormal menstrual duration were 15 people (50%). The number of subjects who experienced normal menstrual volume were 7 people (23%) and who experienced abnormal menstrual duration were 23 people (77%).

3. Hemoglobin Level

The research results of the hemoglobin level from the subject can be seen in table 3.

Table 3. Hemoglobin Level

Hemoglobin Level	Result	
	f	%
Normal	22	73,33
Anemia	8	26,67
Total	30	100

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Based on the research results by measuring of hemoglobin levels using the easy touch GCHb tools it was found that students who had hemoglobin levels ≥ 12 g/dL were 22 people (73.33%) and students who had hemoglobin levels < 12 g/dL were 8 people (26.67%) categorized as anemia.

Based on the data, the relationship between menstrual patterns and hemoglobin levels can be seen in table 4.

Table 4. Menstrual Patterns with Hemoglobin Levels

Menstruation Patterns	Category	Hemoglobin Level			
		≥ 12 g/dL		< 12 g/dl	
		f	%	F	%
Menstrual Cycle	Brief	3,00	13,64		37,50
	Normal	13,00	59,09	2,00	25,00
	Long	6,00	27,27	3,00	37,50
Total		**22**	**100,00**	**8**	**100,00**
Duration of Menstruation	Normal	12	54,55	3	37,50
	Abnormal	10	44,45	5	62,50
Total		**22**	**100,00**	**8**	**100**
Menstrual Volume	Normal	6	27,27	1	87,50
	Abnormal	16	72,73	7	12,50
Total		**22**	**100**	**8**	**100**

Based on the results of the analysis, it was found that female students who experienced a short menstrual cycle with anemia were 3 people (37.50%), female students who experienced a normal menstrual cycle with anemia were 2 people (25%) and female students who experienced anemia with a long menstrual cycle were 3 people (37.50%). Girls who experienced normal menstrual duration with anemia were 3 people (37.50%) and girls who experienced abnormal menstrual duration with anemia were 5 people (62.50%). Girls who experienced normal menstrual volume with anemia were 1 person (12.50%) and girls who experienced abnormal menstrual length with anemia were 7 people (87.50%).

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Table 5. Age of Menarche and Menstrual Patterns

Menstruation Patterns	Category	Age of Menarche			
		Abnormal		Normal	
		f	%	f	%
Menstrual Cycle	Brief	1	25,00	5	19,23
	Normal	3	75,00	15	46,15
	Long	0	0,00	9	34,62
Total		**4**	**100,00**	**26**	**100,00**
Duration of Menstruation	Normal	2	50,00	13	50,00
	Abnormal	2	50,00	13	50,00
Total		**4**	**100,00**	**26**	**100**
Menstrual Volume	Abnormal	3	75,00	20	76,92
	Normal	1	25,00	6	23,08
Total		**4**	**100**	**26**	**100**

Based on the results of the analysis conducted, 25% of female students experience abnormal age of menarche with a short menstrual cycle, 75% of female students experience abnormal age of menarche with a normal menstrual cycle and there was no of female students experience abnormal age of menarche with a long menstrual cycle. On the other hand 50% of female students with abnormal age of menarche have abnormal menstrual duration and 50% of female students with abnormal age of menarche have normal menstrual duration. There were 75% of female students experiencing abnormal menarche age have abnormal menstrual volume and 25% of female students experiencing abnormal menarche age have normal menstrual volume.

DISSCUSSION

Anemia is a condition where hemoglobin (Hb) in the blood is lower than the normal value for a group of people according to age and gender. Based on the results of data analysis that has been done, 22 (73.33%) have hemoglobin levels ≥ 12 g/dL which means they are not anemic and 8 (26.67%) students have hemoglobin levels < 12 g/dL which means they are anemic. This 26.67% figure is greater than the anemia rate in Bali Province in 2020 which is 5.78%. This figure of 26.67% is also greater than the anemia rate in Denpasar City in 2020, which is 7.55%. This can occur because SMP Negeri 14 Denpasar has not carried out the government program, namely in providing blood supplement tablets. This 26.67% figure is lower than research conducted by Sriningrat involving 74 female students in junior and senior high schools in Denpasar City (Sriningrat et al., 2019). The study showed the results that 34 (45.9%) female students suffer of anemia. This is also in line with research conducted by Widyanthini, involving 135 students at SMK X in Bangli Regency which showed that 92.6% of students did not suffered of anemia (Widyanthini & Widyanthari, 2021).

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This is because Bangli district has been active in implementing the government program, namely the provision of blood supplement tablets. This is also in line with research conducted by Mirani involving 86 adolescent girls in Langsa City which showed that 57 (66.3%) did not suffered of anemia (Mirani et al., 2021).

Iron deficiency anemia is anemia caused by a lack of the mineral fe or iron. This deficiency can be caused by a lack of consumption of iron-containing foods, impaired absorption or excretion of iron from the body such as when adolescent girls experience bleeding. The factors that influence the occurrence of anemia are post-menstrual blood loss, nutritional status, food intake and socioeconomics. adolescents with poor nutritional status are at risk of 1.4 times more anemia than adolescents who have normal nutritional status (Mirani et al., 2021).

According of menstrual patterns, female students who experienced a short menstrual cycle were 6 people (20%) and female students who experienced a long menstrual cycle were 9 people (30%). Students who experience abnormal menstrual duration are 15 people (50%) and students who experience abnormal menstrual volume are 23 people (77%).

This is in line with research conducted by Sholicha, involving 62 samples at SMA Negeri 1 Gresik, which showed that 70% of the samples experienced abnormal menstruation. After conducting interviews, female students experienced short menstrual cycles (< 21 days) and long menstrual cycles (> 35 days), experienced menstruation for < 4 days and > 7 days, experienced pain during menstruation, and experienced menstruation more than once a month (Sholicha & Muniroh, 2019). This is also in line with research conducted by

Herlinadiyaningsih, involving 147 female students at SMA Negeri 4 Palangka Raya which showed the results that 69 (46.9%) female students experienced a short menstrual cycle (<21 days), 24 (16.3%) female students experienced a long menstrual cycle (>35 days) (Gultom et al., 2021). Girls who experienced abnormal menstrual volume with anemia were 7 people (87.50%) and girls who experienced normal menstrual volume with anemia were 1 person (12.50%). This is in line with research conducted by Sholichai, involving 62 students in grades X and XI at SMA Negeri 1 Gresik, which showed the results of 70% of students experiencing anemia and abnormal menstrual patterns. Adolescent girls who experience abnormal menstruation tend to be more at risk of anemia Anemia of adolescent girls can occur because adolescent girls experience menstruation which causes heavy blood loss during abnormal menstruation (Sholicha & Muniroh, 2019).

This is also in line with research conducted by Nofianti, involving 89 students at SMP Negeri 2 Kerambitan which resulted in 83% of students with abnormal menstrual cycles experiencing anemia. This can occur because students experience menstrual disorders with short menstrual cycles, long periods of menstruation and abnormal bleeding, causing students to experience heavy blood loss during menstruation (Nofianti et al., 2021). This is also in line with research conducted by (Studi et al., 2016), involving 62 adolescent girls at SMA Muhammadiyah 7 Yogyakarta which resulted in 57.1% of students with abnormal menstrual duration experiencing anemia. The study also explained that adolescent girls who experienced abnormal menstrual duration had a 7.556 times greater risk of anemia compared to adolescent girls who experienced normal menstrual

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duration. Research conducted by Silvia, involving 70 adolescent girls at SMK Negeri 10 Semarang resulted in a relationship between the cycle and length of menstruation with the incidence of anemia (Silvia et al., 2019).

Abnormal menstrual cycles are a factor in anemia. Losing a lot of blood during menstruation can cause anemia. This is because land loss causes iron stores in the body to decrease and absorption of iron into the body is low so that it cannot replace iron loss during menstruation. Duration of menstruation that lasts more than 7 days can cause adolescent girls to experience more iron loss (Suhariyati et al., 2020). Based on this, there is a tendency for menstrual patterns with the incidence of anemia.

Based on the results of data analysis, it was found that 75% of female students experiencing abnormal menarche age had abnormal menstrual volume and 25% of female students experiencing abnormal menarche age had normal menstrual volume. This is in line with research conducted by Gultom, involving 40 high school students in Pontianak, as many as 43.75% of students experienced abnormal menstrual cycles and abnormal menarche age. According of chi square analysis p value = 0.305 (> 0.05) states that there is no relationship between the menstrual cycle and the age of menarche (Gultom et al., 2021). This is also in line with research conducted by Fitriningtyas involving 50 female students of Pesantren Nurul Huda, which stated that 12% of students experienced a normal menstrual cycle with abnormal menarche age and 18% of students experienced an abnormal menstrual cycle with normal menarche age (Fitriningtyas et al., 2017).

CONCLUSIONS AND SUGGESTIONS

Based on the research that has been carried out, it can be concluded ie ;

1. The average hemoglobin level of female students at SMP Negeri 14 Denpasar is 14.3 g/dl. Almost students did not suffer from anemia (73.33%).

2. Menstrual pattern of female students at SMP Negeri 14 Denpasar, 50% of female students experience normal menstrual cycle, 20% experience short menstrual cycle and 30% experience long menstruation.

3. The description of menstrual patterns based on anemia status in female students at SMP Negeri 14 Denpasar shows a tendency of menstrual patterns (cycle, duration and volume) with the prevalence of anemia. A total of 37.50% of female students have experience a long menstrual cycle with anemia.

Suggestions that can be given in this research are:

1. The author's suggestion that can be conveyed to the school is to immediately carry out a government program in collaboration with the nearest Public Health Center for providing blood supplement tablets.

2. The suggestion that the author can convey to other researchers is to conduct further research to find out other causes of anemia

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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